

Your Guide to Observing the Night Sky

There are lots of things to look for in the night sky, constellations, stars of different colours, planets, galaxies and of course the Moon. The sky changes over time because the Earth rotates every 24 hours and orbits the Sun once every 365.25 days. Here are some tips on how to become an astronomer:

Preparation

- Check the weather forecast for your region, [metoffice.gov.uk](https://www.metoffice.gov.uk)
- Check when the Sun sets from your location, timeanddate.com
- You can also check the rise and set times of the Moon and its phase on timeanddate.com. The 'Meridian Passing' column will tell you the time at which the Moon is highest in the sky. This is the best time to see it as there will be less atmospheric disturbance.

Choose what to look for

- See what the Moon will look like and where it will be in the sky using Stellarium, stellarium.org. Stellarium is easy to use and will help you plan your observing session. Check out a simple demo of Stellarium in our video 'How to look for Jupiter', vimeo.com/64555987. There are many other stargazing apps that will help you navigate the sky for a wide range of device and platforms.
- If you would like to see a red Moon this happens when it is low in the sky (a few hours after Moonrise). If you are looking at stars or galaxies it is best to look at these when the Moon is not above the horizon or if it is a New Moon (0% illumination).
- Look for constellations, planets and galaxies using Stellarium. You could also visit the Peter Harrison Planetarium at the Royal Observatory Greenwich where our astronomers will show you what to look for in the sky, <http://www.rmg.co.uk/see-do/planetarium-shows>
- Meteor showers occur at certain times of the year. These occur when the Earth ploughs into cometary debris on its path around the Sun. meteorwatch.org/meteor-info/meteor-calendar/

- Comets (balls of ice and rock from the outer Solar System) sometimes appear in the sky, these are usually very faint but often look spectacular if they have long tails.
<https://www.ast.cam.ac.uk/~jds/future.htm>

Get Observing

- If you live in a city you should try and find objects that have an apparent magnitude of less than 3. Apparent magnitude is a measure of how bright stars are relative to each other in the sky. The smaller the number, the brighter they appear to be. If you live in a dark region outside of the city you can look for objects as faint as magnitude 6. If you have binoculars or a telescope you can look for even fainter objects but the limit will depend on the atmosphere and how powerful your telescope is. Try looking for the faintest objects you can find!
- If you have a compact bridge or DSLR camera (one where you can change the ISO setting, the aperture size and the exposure time) then you can try and take photographs of the Moon/constellation/planet/galaxy. For advice on astrophotography, go to www.rmg.co.uk/discover/astronomy-photographer-competition/how-to-guides

Show off your pictures

Alternatively you can use a robotic telescope to take pictures of a wide variety of objects. The National Schools Observatory Liverpool Telescope is a fully-robotic telescope on top of an extinct volcano in La Palma off the coast of Africa. Here the sky is clear and dark, perfect conditions for stargazing. The telescope has a 2 metre wide mirror allowing you to obtain beautiful images of faint objects such as star nurseries, dying stars and galaxies.

Register with the National Schools Observatory and submit your own observations to the Liverpool Telescope, schoolsobservatory.org.uk. The GCSE Astronomy Projects option allows you to select your filter and exposure time for observations of the Moon, nebulae and galaxies.

Insight Astronomy Photographer of the Year

Here at the Royal Observatory Greenwich we love space and want to see your photos of the night sky. Submit your favourite photos to our competition and you may become Astronomy Photographer of the Year.
www.rmg.co.uk/discover/astronomy-photographer-competition